

Trend Study 16C-13-99

Study site name: West Huntington Canyon.

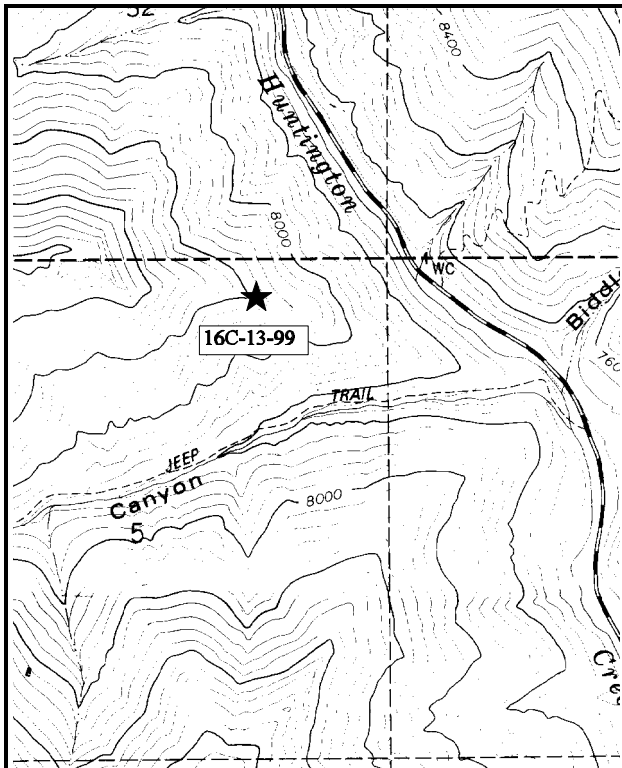
Range type: Curleaf Mountain Mahogany.

Compass bearing: frequency baseline 117°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

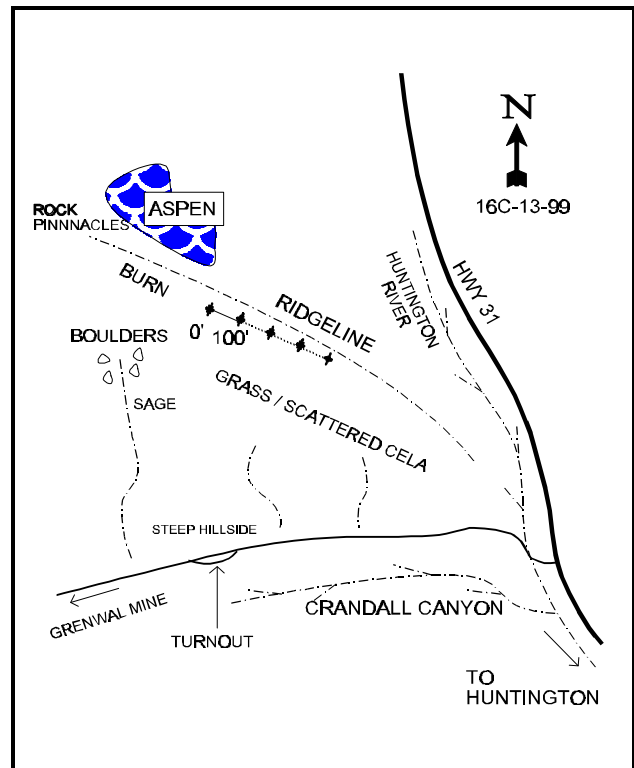
LOCATION DESCRIPTION

From Highway 31, the Huntington Canyon road, turn onto the Crandall Canyon road. Go up the canyon 0.7 miles to a turnout. From the turnout, look up the ridge to the north. The study site is on the top of the ridge on the eastern edge of an old burn; now sagebrush/grass and scattered mahogany. The site can be reached by a 1/4 mile hike up the steep rocky face, or a 3/4 mile hike up the ridge starting by the Huntington River. Once the top of the ridge below the rock pinnacles is reached, the study stakes are not difficult to locate. The 0-foot baseline stake is marked by browse tag #902S.



Map Name: Rilda Canyon

Township 16S, Range 7E, Section 5



Diagrammatic Sketch

UTM 4368314.158 N, 486551.276 E

DISCUSSION

Trend Study No. 16C-13 (31-11)

The West Huntington Canyon trend study is located on the west side of Huntington Canyon along the top of the ridge, north of Crandall Canyon. The south-facing slopes and ridge tops in this area are used by elk in the winter. Clumps of aspen also provide summer deer habitat. This area does not appear to be used by livestock, probably due to its inaccessibility and lack of water. Pellet group data from 1999 estimate 10 deer and 96 elk days use/acre (25 ddu/ha, 237 edu/ha). All pellet groups appear to be from the previous winter. The study is within a curlleaf mountain mahogany type that burned many years ago. Along with the sparse mahogany overstory, there is an understory of bluebunch wheatgrass, Salina wildrye, Oregon grape, and mountain big sagebrush.

The study is on the south side of the ridge, just below the ridge top with a southeast aspect. The elevation is 8,400 feet. The slope is very steep (45%) and rocky. Cliffs are formed by exposure of the underlying sandstone. The rocky nature of the site allows for generally shallow soils, but there are deep spots between rocks which provide good rooting sites for trees. Effective rooting depth is actually moderately deep and is estimated at just over 16 inches. The texture is a clay with a slightly alkaline pH (7.4). Phosphorus is limited at only 5.5 ppm where values less than 10 ppm can limit normal plant growth and development. In spite of severe pedestalling and exposed roots, the large bluebunch wheatgrass and Salina Wildrye play a major role in holding the soil in place. For the most part, the soil is moderately protected. Erosion is inevitable due to the steepness of the slope, but it does not appear to be excessive.

The dominant overstory on the site consists of a few scattered mature curlleaf mountain mahogany, some of which are mostly unavailable due to height and highlining. Smaller, more available mahogany sampled on the site were heavily browsed in 1999. Mountain big sagebrush, the key browse species, provides more than half of the browse cover. It had a density of 3,466 plants/acre in 1988, 1,520 in 1994, and 1,760 by 1999. Due to the apparent lack of dead plants in 1994 and 1999, the large decrease in population density between 1988 and 1994 is the result of the much larger sample size used in 1994. The study site baseline was lengthened in 1994 which more than tripled the original sample size for browse. Sagebrush was mostly lightly utilized in 1988 and 1994, with more moderate use in 1999. The population is healthy with good vigor and low decadence.

Snowberry, low rabbitbrush, pinyon, and Rocky Mountain juniper are present on the mountainside but in low numbers. The most numerous browse is Oregon grape, which provided 33% of the browse cover in 1994 and 29% in 1999. Although no signs of a hedged growth form can be found on these small shrubs, elk have been known to utilize this species as part of their winter diet.

Salina wildrye is the most abundant grass followed by bluebunch wheatgrass. It appears that there was an identification problem between bluebunch wheatgrass and Salina wildrye in 1994. Currently ('99) Salina wildrye provides 87% of the grass cover and 49% of the total vegetation cover. Bluebunch wheatgrass provides an additional 13% of the grass cover. There is also a small amount of Carex. Forbs are rare and only aster is common. The aster currently ('99) provides 63% of the limited forb cover.

1994 TREND ASSESSMENT

Ground cover characteristics have changed somewhat since 1988. Percent litter cover has declined considerably due to drought conditions and percent bare ground has increased. However, the herbaceous understory is abundant and adequately protects the soil from erosion indicating a stable soil trend for the time being. The browse trend is stable for the key browse species, mountain big sagebrush, but down for seedlings, and young. Percent decadency rates are low. Overall, trend for browse is slightly down. Trend for herbaceous understory is stable with improvements in species composition. Nested frequency of grasses declined slightly, while nested frequency of forbs increased.

TREND ASSESSMENT

soil - stable

browse - slightly down due to declining biotic and reproductive potentials of sagebrush

herbaceous understory - stable

1999 TREND ASSESSMENT

Trend for soil continues to be stable. Percent litter cover remains similar to 1994 estimates, but percent bare ground has declined. There is some enviable erosion occurring due to the steep slope. Pedestaling and terracing are evident, however the abundant herbaceous cover helps stabilize the soil. Trend for browse is stable. The key species, mountain big sagebrush has a relatively stable density of 1,760 plants/acre. Vigor is good, percent decadence is low, and use is light to moderate. The preferred curleaf mountain mahogany occurs in low densities. It is moderately to heavily hedged where available. Trend for the herbaceous understory is stable. The dominate species is Salina wildrye which provides 87% of the grass cover, 74% of the herbaceous cover or 49% of the total vegetation cover. It appears that much of this grass was misidentified as bluebunch wheatgrass in 1994. Forbs are limited, yet they have increased slightly in nested frequency since 1994. Aster is the only abundant forb.

TREND ASSESSMENT

soil - stable

browse - stable

herbaceous understory - stable but dominated by Salina wildrye

HERBACEOUS TRENDS --

Herd unit 16C, Study no: 13

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'94	'99	'88	'94	'99	'94	'99
G	Agropyron spicatum	_a 40	_b 194	_a 68	18	68	29	10.87	2.84
G	Carex spp.	_b 15	_a 5	_a 5	10	2	2	.03	.06
G	Elymus salina	_c 279	_a 80	_b 229	91	33	79	3.08	19.46
G	Koeleria cristata	-	-	2	-	-	1	-	.00
G	Poa pratensis	-	-	1	-	-	1	-	.06
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		334	279	305	119	103	112	13.98	22.43
Total for Grasses		334	279	305	119	103	112	13.98	22.43
F	Achillea millefolium	_a -	_a 2	_b 9	-	1	4	.03	.23
F	Antennaria microphylla	-	3	-	-	1	-	.03	-
F	Artemisia ludoviciana	_a -	_{ab} 3	_b 6	-	1	5	.15	.07
F	Aster chilensis	_a 19	_b 44	_a 4	7	16	2	.76	.06
F	Astragalus convallarius	_a 2	_{ab} 12	_b 19	1	5	9	.07	.88
F	Aster spp.	_a 20	_a 32	_b 69	9	13	24	.26	2.43
F	Astragalus spp.	-	4	-	-	2	-	.18	-
F	Chenopodium album (a)	-	2	-	-	1	-	.00	-
F	Chaenactis douglasii	-	4	-	-	2	-	.01	-

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'94	'99	'88	'94	'99	04	09
F	Cirsium spp.	-	1	-	-	1	-	.03	.00
F	Hymenoxys richardsonii	1	-	-	1	-	-	-	-
F	Ipomopsis aggregata	-	-	1	-	-	1	-	.00
F	Machaeranthera canescens	4	5	11	2	3	5	.22	.13
F	Phlox longifolia	a-	ab6	b11	-	2	5	.01	.02
F	Sanguisorba minor	-	-	-	-	-	-	-	.00
F	Schoenocrambe linifolia	-	3	-	-	1	-	.00	-
F	Taraxacum officinale	1	-	-	1	-	-	-	-
Total for Annual Forbs		0	2	0	0	1	0	0.00	0
Total for Perennial Forbs		47	119	130	21	48	55	1.77	3.86
Total for Forbs		47	121	130	21	49	55	1.78	3.86

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 16C, Study no: 13

T y p e	Species	Strip Frequency		Average Cover %	
		04	09	04	09
B	Artemisia tridentata vaseyana	44	49	4.25	8.53
B	Cercocarpus ledifolius	7	5	.15	.00
B	Chrysothamnus nauseosus	0	0	-	-
B	Chrysothamnus viscidiflorus	1	4	.00	.30
B	Gutierrezia sarothrae	0	2	-	.03
B	Juniperus osteosperma	-	-	.63	-
B	Mahonia repens	65	60	2.47	3.85
B	Pachistima myrsinites	1	2	-	.09
B	Sambucus cerulea	0	2	-	-
B	Symphoricarpos oreophilus	6	5	.06	.53
Total for Browse		124	129	7.58	13.34

BASIC COVER --

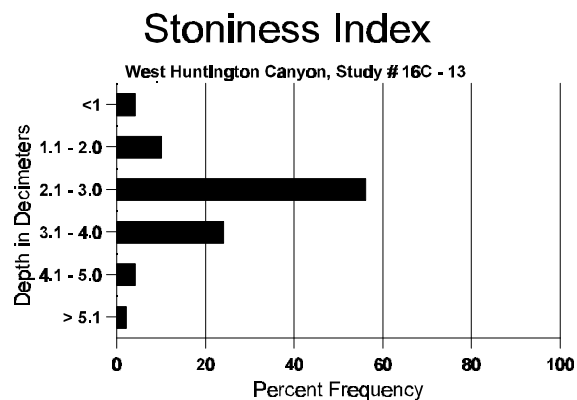
Herd unit 16C, Study no: 13

Cover Type	Nested Frequency		Average Cover %		
	04	09	'88	'94	'99
Vegetation	300	316	10.25	24.57	40.22
Rock	285	189	10.00	9.04	10.68
Pavement	227	247	1.25	1.21	5.88
Litter	382	360	53.00	32.40	33.01
Cryptogams	8	1	0	.04	.00
Bare Ground	311	298	25.50	30.77	25.76

SOIL ANALYSIS DATA --

Herd Unit 16C, Study # 13, Study Name: West Huntington Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
16.3	54.6 (16.3)	7.4	23.3	32.2	44.6	3.2	5.5	99.2	0.7



PELLET GROUP DATA --

Herd unit 16C, Study no: 13

Type	Quadrat Frequency		Pellet Transect Days Use/Acre (ha)
	04	09	
Rabbit	13	7	n/a
Elk	47	54	96 (237)
Deer	4	6	10 (24)

BROWSE CHARACTERISTICS --

Herd unit 16C, Study no: 13

Field unit 10C, Study no. 13																		
A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
S	88	22	-	-	-	-	-	2	-	-	24	-	-	-	1600			24
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	88	28	1	-	1	-	-	-	-	-	29	-	1	-	2000			30
	94	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
	99	11	-	-	-	-	-	-	-	-	11	-	-	-	220			11
M	88	19	-	-	-	-	-	-	-	-	18	-	1	-	1266	13	21	19
	94	50	9	1	-	-	-	-	-	-	60	-	-	-	1200	20	32	60
	99	32	29	7	1	-	-	-	-	-	69	-	-	-	1380	16	24	69
D	88	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	94	5	5	-	-	-	-	-	-	-	3	-	-	7	200			10
	99	3	5	-	-	-	-	-	-	-	7	-	-	1	160			8
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		02%			00%			04%			-56%							
'94		18%			01%			09%			+14%							
'99		39%			08%			01%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	3466	Dec:	6%			
												'94	1520		13%			
												'99	1760		9%			
Cercocarpus ledifolius																		
Y	88	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	99	1	-	-	-	-	2	-	-	-	3	-	-	-	60			3
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	3	-	-	1	-	-	-	-	-	4	-	-	-	80	27	18	4
	99	-	-	-	-	3	1	-	-	-	4	-	-	-	80	15	14	4
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		100%			00%			00%			+75%							
'94		00%			00%			00%			-46%							
'99		43%			43%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	66	Dec:	-			
												'94	260		-			
												'99	140		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysanthamnus nauseosus																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	11	15	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	29	53	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'94		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'94	0		-			
												'99	0		-			
Chrysanthamnus viscidiflorus																		
Y	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	10	10	1
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	10	15	1
	99	6	-	-	-	-	-	-	-	-	6	-	-	-	120	9	14	6
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%			-85%							
'94		00%			00%			00%			+83%							
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	132	Dec:	-			
												'94	20		-			
												'99	120		-			
Gutierrezia sarothrae																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80	8	12	4
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'94		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'94	0		-			
												'99	80		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Mahonia repens																		
S	88	163	-	-	-	-	-	27	-	-	190	-	-	-	12666		190	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	13	-	-	-	-	-	-	-	-	13	-	-	-	260		13	
Y	88	143	-	-	-	-	-	-	-	-	143	-	-	-	9533		143	
	94	56	-	-	-	-	-	-	-	-	56	-	-	-	1120		56	
	99	297	2	-	-	-	-	-	-	-	299	-	-	-	5980		299	
M	88	489	-	-	-	-	-	20	-	-	509	-	-	-	33933	5 4	509	
	94	777	-	-	4	-	-	-	-	-	781	-	-	-	15620	9 12	781	
	99	644	-	-	28	-	-	-	-	-	672	-	-	-	13440	4 5	672	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%			-61%							
'94		00%			00%			00%			+14%							
'99		.20%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	43466	Dec:	-			
												'94	16740		-			
												'99	19420		-			
Pachistima myrsinites																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	3 2	1	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9 9	0	
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'94		00%			00%			00%			+67%							
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'94	20		-			
												'99	60		-			
Sambucus cerulea																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	8	-	-	-	-	-	-	-	-	8	-	-	-	160		8	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	40 52	0	
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80	57 68	4	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'94		00%			00%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'94	0		-			
												'99	240		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Symphoricarpos oreophilus																		
Y	88	-	-	-	3	-	-	-	-	-	3	-	-	-	200		3	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	8	-	-	-	-	-	-	-	-	8	-	-	-	160	11	8	
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100	14	5	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'88 00%			00%			00%			-20%							
		'94 00%			00%			00%			-38%							
		'99 00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	200	Dec:	-			
												'94	160		-			
												'99	100		-			